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| 10/550,839 | 11/13/2006 | Yoshitsugu Morita | 71,051-020 | 5484 |

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| EXAMINER |
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ZARNEKE, DAVID A

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| ART UNIT | PAPER NUMBER |
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2891

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03/04/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/550,839 | Applicant(s) MORITA ET AL. | |
| | Examiner David A. Zarneke | Art Unit 2891 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-10 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>9/15/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereafter AAPA).

In re claims 1 and 10, AAPA (specification page 1, [0005]) teaches a method of manufacturing a semiconductor device sealed with silicone rubber, characterized by:

- 1) placing an unsealed semiconductor device into a mold,
 - 2) thereafter filling in spaces between the mold and the semiconductor device,
- and
- 3) subjecting the composition to compression molding.

AAPA fails to teach molding using a sealing silicone rubber composition.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a sealing silicone rubber composition in the invention of AAPA because a sealing silicone rubber composition is a conventionally known in the art encapsulant, as evinced by Ishikawa et al., US Patent 6,888,259 (4, 38+), and/or Jacobs, US Patent 6,492,204 (10, 5+). The use of conventional materials to perform their known functions is obvious (MPEP 2144.07).

Regarding claim 2, while AAPA fails to teach the mold comprises an upper mold and a lower mold, step 1) is performed by placing the unsealed semiconductor device into the lower mold, step 2) is performed by filling the spaces between the upper mold and the semiconductor device, and the unsealed semiconductor device is clamped between the upper mold and the lower mold after step 2) and before step 3), it would have been obvious to one of ordinary skill in the art at the time of the invention to use these steps in the invention of AAPA because this is the conventionally known and used method of compression molding, as evinced by Eguchi et al., US Patent 6,627,997 (figures 5A-5F). The use of conventional materials/techniques to perform their known functions is obvious (MPEP 2144.07).

With respect to claim 3, while AAPA fails to teach said silicone rubber composition is a hydrosilylation reaction-curable silicone rubber composition, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a hydrosilylation reaction-curable silicone rubber composition in the invention of AAPA because this is a conventionally known and used type of silicone rubber composition.

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The use of conventional materials/techniques to perform their known functions is obvious (MPEP 2144.07).

As to claim 4, while AAPA fails to teach said silicone rubber composition can be cured into a silicone rubber having a complex elastic modulus of 1 GPa or less, it would have been obvious to one ordinary skill in the art at the time of the invention to optimize the complex elastic modulus through routine experimentation (MPEP 2144.05).

In re claim 5, while AAPA fails to teach at least two unsealed semiconductor devices are sealed with the use of said silicone rubber, and then the sealed semiconductor devices are separated by cutting into individual sealed semiconductor devices, it would have been obvious to one of ordinary skill in the art at the time of the invention to seal at least two unsealed semiconductor devices in the invention of AAPA because this is conventionally known and used in the art in order to increase throughput. The use of conventional materials/techniques to perform their known functions is obvious (MPEP 2144.07).

Regarding claim 6, while AAPA fails to teach said semiconductor device comprises semiconductor chips on a printed-circuit board electrically interconnected via bonding wires, it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the chips electrically connected by bond wires to a PCB in the invention of AAPA because this is conventionally known and used in the art, as evinced by Eguchi et al., US Patent 6,627,997 (figures 6A-F). The use of conventional materials/techniques to perform their known functions is obvious (MPEP 2144.07).

With respect to claim 7, while AAPA fails to teach said silicone rubber composition is supplied to the semiconductor chips on the printed-circuit board, and connections between semiconductor chips and the bonding wires are sealed with the silicone rubber, it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the chips in this manner in the invention of AAPA because this is conventionally known and used in the art, as evinced by Eguchi et al., US Patent 6,627,997 (figures 6A-F). The use of conventional materials/techniques to perform their known functions is obvious (MPEP 2144.07).

As to claim 8, while AAPA fails to teach inner surfaces of the mold are covered with an attached release film, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an attached release film in the invention of AAPA because this is conventionally known and used in the art in order to ensure a clean detachment of the packaged device from the mold. The use of conventional materials/techniques to perform their known functions is obvious (MPEP 2144.07).

In re claim 9, while AAPA fails to teach said release film is attached to the inner surfaces of the mold by air suction, it would have been obvious to one of ordinary skill in the art at the time of the invention to use air suction in the invention of AAPA because this is conventionally known and used in the art in order to ensure a clean detachment of the packaged device from the mold by not requiring an adhesive to attach the release film to the mold. The use of conventional materials/techniques to perform their known functions is obvious (MPEP 2144.07).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (571)-272-1937. The examiner can normally be reached on M-Th 7:30 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571)-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David A. Zarneke/
Primary Examiner, Art Unit 2891
2/27/09